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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,688	11/08/2002	Russell P. Schuchmann	ETC7455.050	2325
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ZIOLKOWSKI PATENT SOLUTIONS GROUP, LLC (EATON) 14135 NORTH CEDARBURG ROAD MEQUON, WI 53097				
			EXAMINER MILLER, PATRICK L	
			ART UNIT 2837	PAPER NUMBER

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,688

Applicant(s)

SCHUCHMANN, RUSSELL P.

Examiner

Patrick Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 4-12, 14, 15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kliman (6,199,023) in view of Solomon et al (5,754,450).
 - With respect to claims 1, 8, 9, 14, 15, and 19, Kliman discloses a method of detecting mechanical anomalies using a motor computer readable storage medium/controller (fig. 5, #37) having a voltage sensor and a current sensor (fig. 5, #32 and #34), the controller: receives voltage and current signals from said sensors, respectively (fig. 5, i(t) and v(t) to #37), compares the instantaneous power to a model power (fig. 5, at #50), and generates a real-time spectrum analysis and determines undesirable torque conditions based on the presence of undesirable harmonics in the power signal and from the spectrum analysis (fig. 5, #56).
 - Kliman does not explicitly disclose determining a real-time power signal from the voltage and current signals and using this motor controller with a motor-driven pump.
 - Solomon et al disclose the "MCSA" technique that computes a power spectrum and is used with a pump (col. 1, lines 44-50/17-20). The motivation to use the

“MCSA” technique with a pump is to provide the advantage of early detection of performance problems or faults.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the system of Kliman could be used with motor-driven pumps and use voltage and current signals to create a power spectrum indicative of undesirable conditions, thereby providing the advantage of detecting performance problems or faults earlier, as taught by Solomon et al.
- With respect to claims 4 and 10, Kliman discloses applying a FFT to the signal (col. 5, lines 37-46).
- With respect to claims 5 and 11, Kliman discloses applying a band-pass filter to the signal (cols. 5/6, lines 64-67/1-10).
- With respect to claim 6, Kliman discloses determining undesirable torque conditions by comparing a model with the real-time spectrum analysis (col. 5, lines 51-55).
- With respect to claim 7, Kliman discloses undesirable torque conditions as mechanical interferences (col. 1, lines 11-13).
- With respect to claim 12, Kliman discloses an ac motor, where a person of ordinary skill in the art would use a three-phase ac signal to power the motor (fig. 5, ac motor).
- With respect to claim 18, a person of ordinary skill in the art at the time of the invention would know that the current and voltage sensors of Kliman are configured to acquire current and voltage from at least two phases of the motor (fig. 5, ac motor).

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2. Claims 2, 13, 16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kliman and Solomon et al as applied to claims 1, 8, 14, and 19 above, and further in view of Colhen et al (5,930,150).

- With respect to claims 2, 13, and 20, Kliman and Solomon et al do not disclose a means for displaying the spectrum analysis externally/on a console. Also, with respect to claim 16, Kliman discloses conditioning the voltage and current signals, digitizing them, and applying FFT to the power signal, but does not disclose converting the digital spectral signal to analog using an D/A converter and displaying the analog signal.
- Cohen et al disclose a system that displays the analog spectral analysis results in the form of a graph (Fig. 11(b)). The motivation to show the analysis externally/by a console is so a user may easily read and interpret the data. This provides the advantage of improving research efficiency.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the device of Kliman and Solomon et al so the spectrum analysis can be displayed externally/by a console, thereby providing the advantage of making the data easier to read and interpret, as taught by Cohen et al.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kliman and Solomon et al as applied to claim 1 above, and further in view of Nystom (5,930,092).

- Kliman and Solomon et al do not disclose disabling the pump if the undesirable torque exceeds a threshold.

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- Nystrom discloses interrupting power to a pump motor when a power signal, which is indicative of undesirable torque conditions, is outside a predetermined range (abstract). The motivation to disable the motor is to provide the advantage of protecting it from damage caused by current and voltage spikes due to undesirable disturbances.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the device of Kliman and Solomon et al so the motor is disabled when the power signal, which is indicative of undesirable torque, exceeds a threshold, thereby providing the advantage of protecting the motor from damage, as taught by Nystrom.

Allowable Subject Matter

4. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
 - With respect to claim 17, the Prior Art discloses distinguishing between transient occurring in a power signal using a timer, where if the signal persists after the timer times out, the system determines that the signal is undesirable and cuts-off power to the motor. However, the Prior Art does not disclose distinguishing transients based on several cycles of undesirable harmonics in the real-time power signal.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on 571-272-2800 ext 37. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Miller
Examiner
Art Unit 2837

pm
March 7, 2004


ROBERT NAPPI
SUPERVISORY PATENT EXAMINER